

ABSTRACT OF THE DISCLOSURE

An n-InP buffer layer, a GRIN-SCH-MQW active layer, and a p-InP spacer layer are sequentially grown on an n-InP substrate. A p-InP blocking layer and an n-InP blocking layer are grown adjacent to an upper region of the n-InP buffer layer, the GRIN-SCH-MQW active layer, and the p-InP spacer layer. A p-InP cladding layer, a p-GaInAsP contact layer, and a p-side electrode are grown on the p-InP spacer layer and the n-InP blocking layer. An n-side electrode is disposed on a rear surface of the n-InP substrate. A grating is disposed within the p-InP spacer layer. The grating selects a light of which number of longitudinal modes is equal to or more than 2 and equal to or less than 60, each of which has an intensity difference equal to or less than 10 decibels from a maximum intensity.